Restaurant Review Classifier

Sentiment Analysis for Restaurant Feedback

Group Members

K. Asrith

Rakesh Reddy

Vajrapu Venkata Sat yanarayana

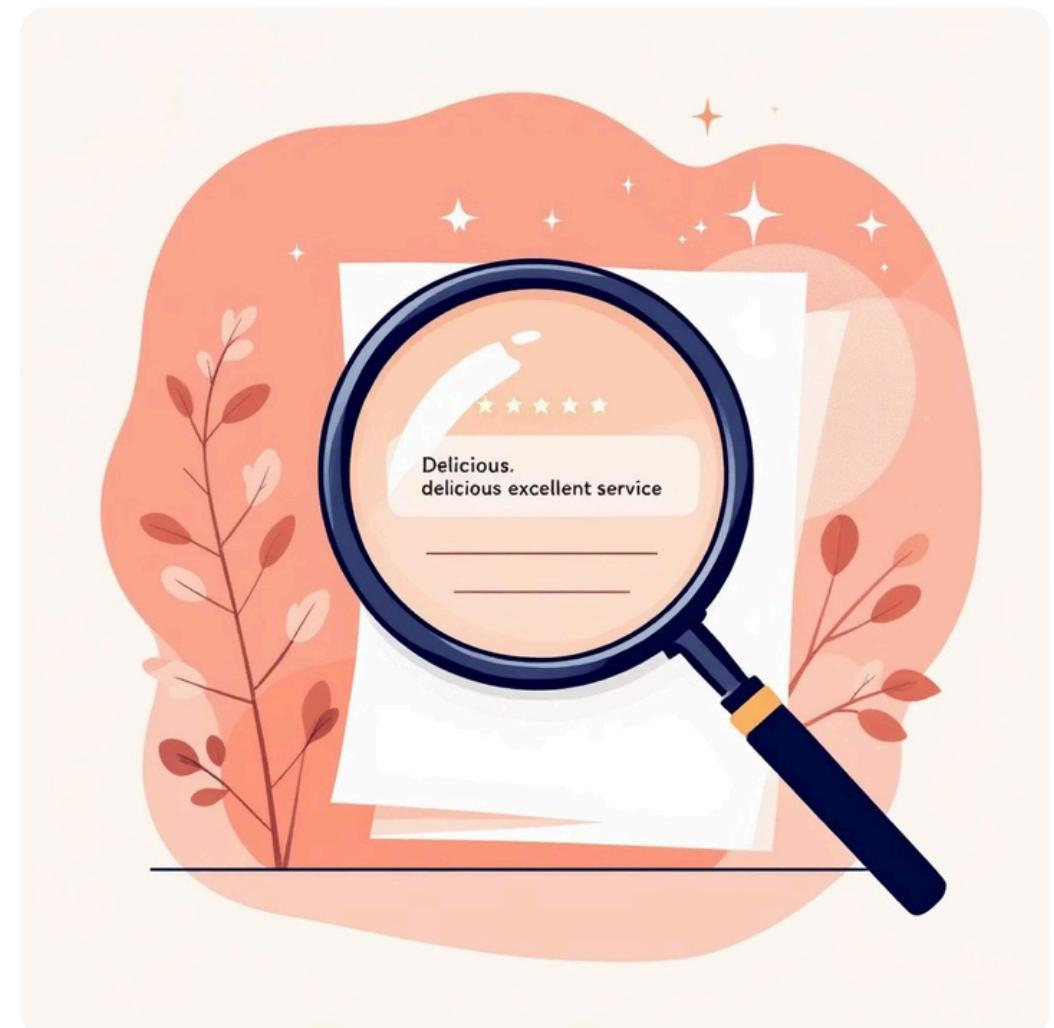A. Rakesh

Thota Siva Ritin

Problem Statement & Objectives

Problem Statement

Manuallyanalyzinglarge volumes of customer feedback is time-consuming and can miss valuable insights.

Objectives

- Classify reviews as Positive or Negative
- Extract key aspects (Food Quality, Service, Hygiene, Staff)
- Provide summarized insights for decision-making
- Improve brand monitoring and customer satisfaction
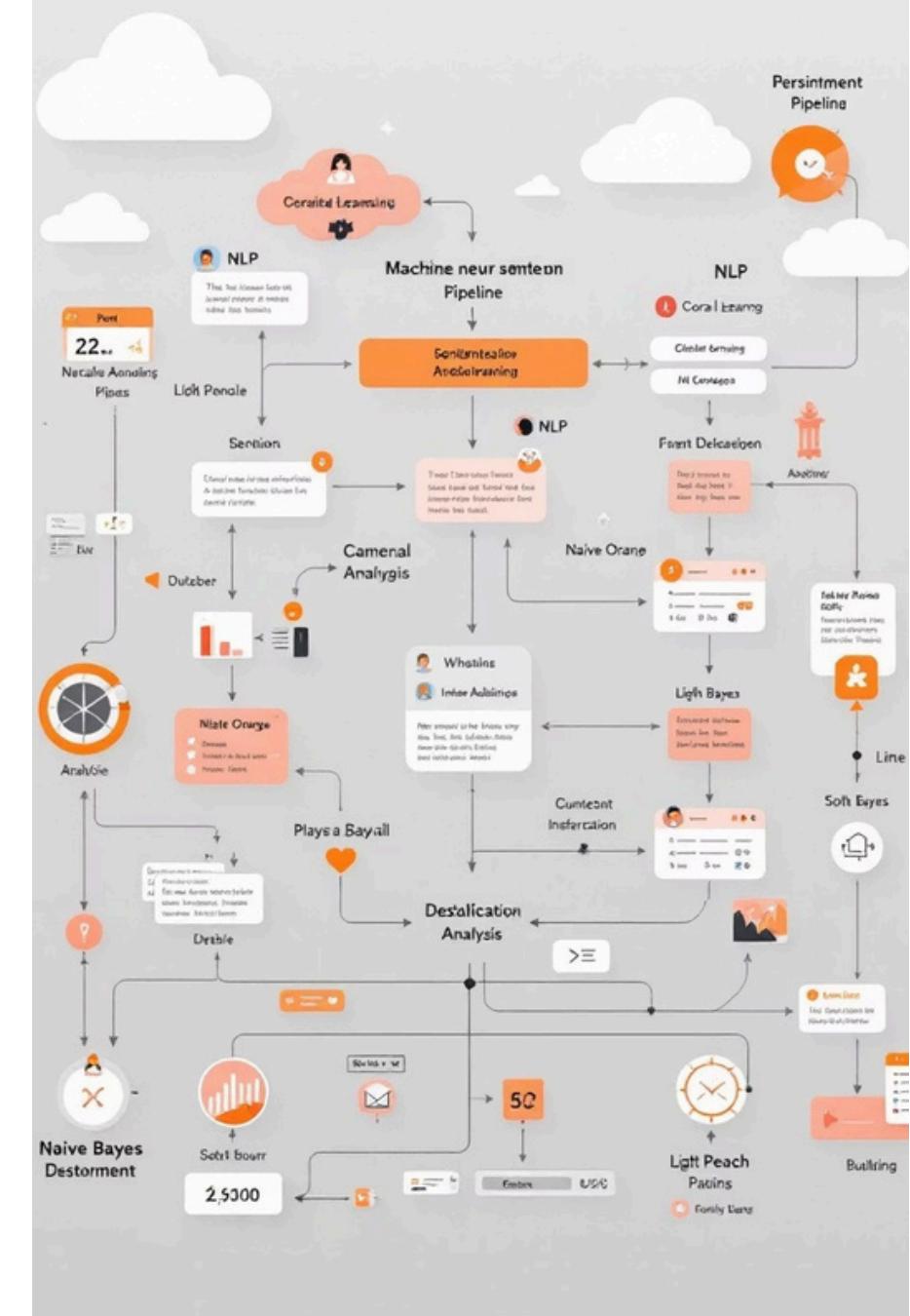
Proposed Solution & Workflow

1   Proposed Solution

Amachine-learningsystem using NLP and Naive Bayes to predict Positive/Negative sentiment from restaurant reviews.
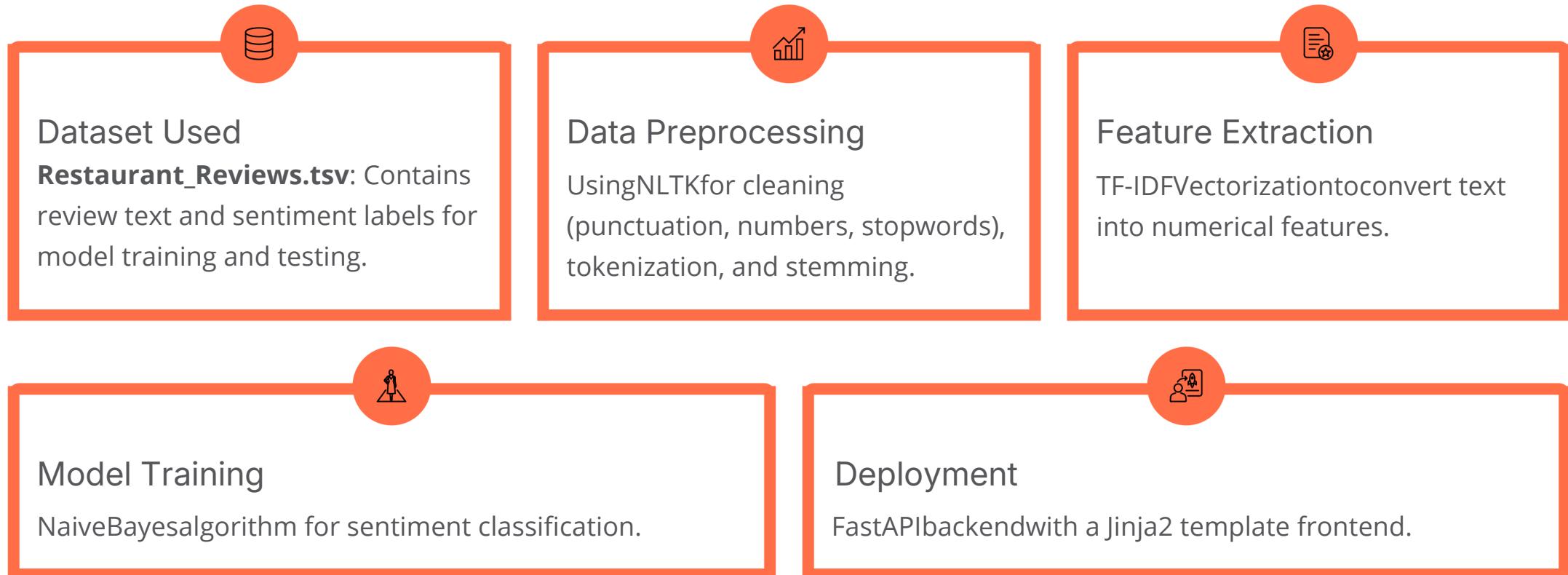
2   Workflow

- Load & Preprocess Data TF-IDF
- Vectorization Train Naive Bayes
- Save Model (.pkl) Build UI (HTML,
- CSS, Jinja2) Deploy Backend
- (FastAPI + Uvicorn) Real-time
- Prediction
-

Dataset & Methodology

Dataset Used

Restaurant_Reviews.tsv: Contains review text and sentiment labels for model training and testing.

Data Preprocessing

UsingNLTKfor cleaning (punctuation, numbers, stopwords), tokenization, and stemming.

Feature Extraction

TF-IDFVectorizationtoconvert text into numerical features.

Model Training

NaiveBayesalgorithm for sentiment classification.

Deployment

FastAPIbackendwith a Jinja2 template frontend.

Technologies Used

Frontend

HTML,CSS,Jinja2 Templates

Backend

FastAPI, Uvicorn

Programming Language

Python

ML / NLP Tools

Scikit-Learn,NaiveBayes, TF-IDF, NLTK

Storage

Pickle(.pklmodel & vectorizer)

Dataset

Restaurant_Reviews.tsv

Results & Findings

Good Accuracy

NaiveBayes modelachieved strong performance on the dataset.

Improved Features

TF-IDF significantlyenhanced feature quality for better prediction.

Effective Classification

System successfully distinguishes Positive and Negative reviews.

Real-time Prediction
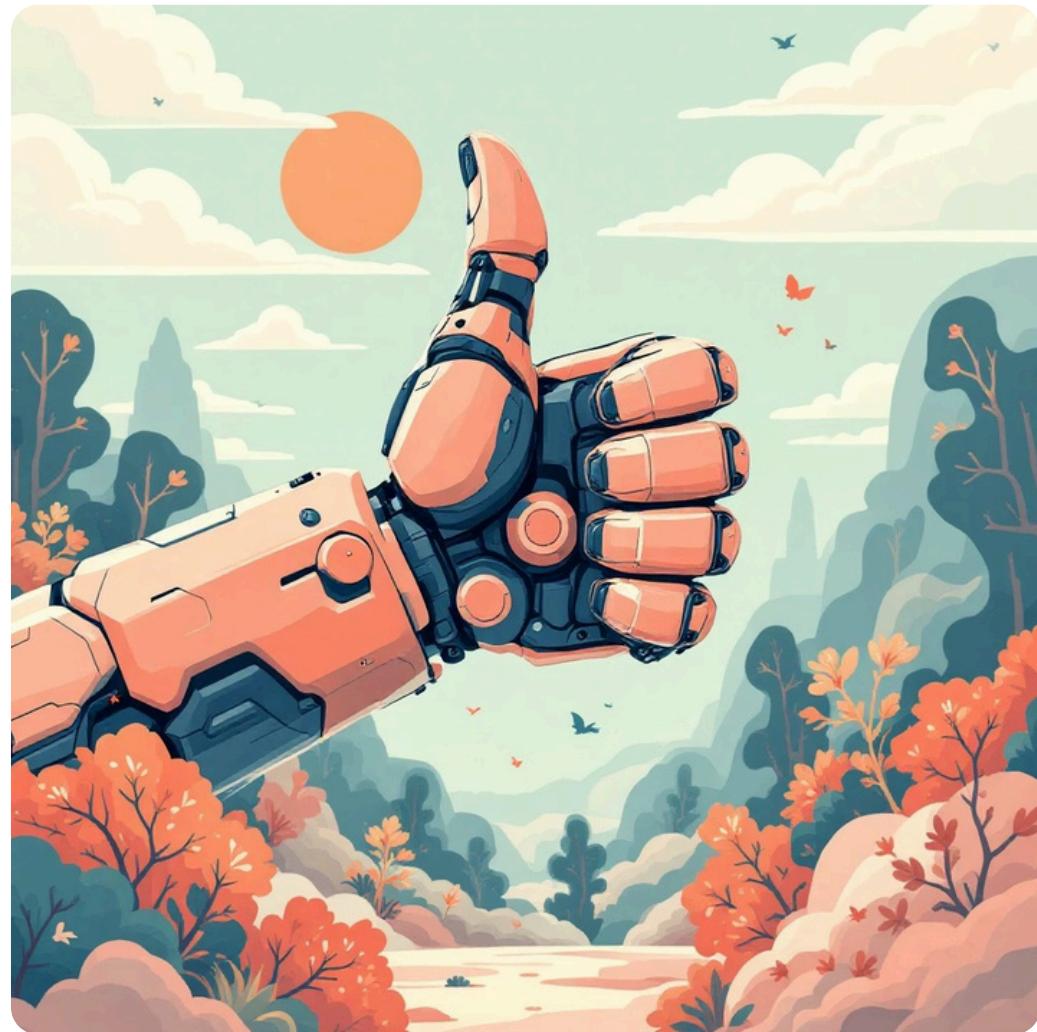
FastAPIdeploymentenables instant sentiment analysis.

Quick Insights

Helpsrestaurantsrapidly understand customer satisfaction.

Conclusion & Future Scope

Conclusion

The RestaurantReview Classifier effectively automates sentiment prediction using NLP and ML, offering a lightweight, fast, and deployable solution via FastAPI.

Future Scope

- Fullanalytics dashboard
- Multi-language support
- Aspect-based analysis (Food, Service, Ambience)
- Upgrade to transformer models (BERT, RoBERTa)
- Cloud deployment (AWS / Render / Azure)